

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings of claims in the application:

**Listing of Claims:**

1. (currently amended)      A process for producing an inorganic oxide imprinted with a plurality of functional groups per imprint site organized in a non-random pattern on the inorganic oxide, comprising:

(a) contacting the inorganic oxide or a source thereof with an imprinting compound comprising (i) a plurality of functional moieties to be imprinted, (ii) a plurality of thermally labile protecting groups and (iii) a silicon- or germanium-containing moiety capable of serving as a linker for the imprinting compound to the inorganic oxide to form an inorganic oxide structure comprising an immobilized imprinting compound; and

(b) removing a thermally labile portion of the imprinting compound from the oxide structure by thermolysis.

2. (currently amended)      A process for producing an inorganic oxide imprinted with a functional group, comprising:

(a) contacting the inorganic oxide or a source thereof with an imprinting compound comprising (i) a functional moiety to be imprinted, (ii) a thermally labile protecting group and (iii) a silicon- or germanium-containing moiety capable of serving as a linker for the imprinting compound to the inorganic oxide to form an inorganic oxide structure comprising an immobilized imprinting compound; and

(b) removing a thermally labile portion of the imprinting compound from the oxide structure by thermolysis;

provided that if the inorganic oxide structure is an oxide substrate imprinted with a single type of functional group, then the imprinted group is other than isocyanate and the thermally labile protecting group is other than a carbamate of an aryl alcohol;

and provided that the inorganic oxide is imprinted with a plurality of functional groups per imprint site organized in a non-random pattern on the inorganic oxide.

3. (currently amended) A process for producing a bulk imprinted inorganic oxide imprinted with one or a plurality of functional groups, comprising:

(a) copolymerizing a source of the inorganic oxide with an imprinting compound comprising (i) one or a plurality of functional moieties to be imprinted, (ii) one or a plurality of thermally labile protecting groups, and (iii) a silicon- or germanium-containing moiety capable of serving as a linker for the imprinting compound to the inorganic oxide to form an inorganic oxide structure comprising an immobilized imprinting compound; and

(b) removing a thermally labile portion of the immobilized imprinting compound from the oxide structure by thermolysis;

and provided that the inorganic oxide is imprinted with a plurality of functional groups per imprint site organized in a non-random pattern on the inorganic oxide.

4. (currently amended) A process for producing an inorganic oxide substrate imprinted with one or a plurality of functional groups, comprising:

(a) contacting a substrate comprising the inorganic oxide with an imprinting compound comprising (i) one or a plurality of functional moieties to be imprinted, (ii) one or a plurality of thermally labile protecting groups for the functional moieties, and (iii) a silicon- or germanium-containing moiety capable of serving as a linker for the imprinting compound to the inorganic oxide to form an inorganic oxide structure comprising an immobilized imprinting compound; and

(b) removing a thermally labile portion of the imprinting compound by means of thermolysis;

provided that if the oxide structure is an oxide substrate imprinted with a single functional group, then the imprinted group is other than isocyanate and the thermally labile protecting group is other than a carbamate of an aryl alcohol moiety;

and provided that the inorganic oxide is imprinted with a plurality of functional groups per imprint site organized in a non-random pattern on the inorganic oxide.

5. (original) A process according to claim 1 in which the inorganic oxide comprises silica, germania, alumina, titania, one or more aluminophosphates, one or more silicaaluminophosphates, ceria, indium-tin oxide, or a mixture thereof.

6. (original) A process according to claim 5 in which the inorganic oxide comprises silica.

7. (original) A process according to claim 1 in which the inorganic oxide is a bulk oxide.

8. (original) A process according to claim 1 in which the inorganic oxide is in the form of an oxide substrate.

9. (original) A process according to claim 4 in which the inorganic oxide substrate comprises a particulate inorganic oxide.

10. (original) A process according to claim 4 in which the inorganic oxide comprises a generally planar surface.

11. (original) A process according to claim 1 in which the thermolysis is conducted by heating the product of step (a).

12. (original) A process according to claim 11 in which the thermolysis is conducted by heating the product of step (a) at a temperature of from about room temperature to about 300°C.

13. (original) A process according to claim 11 in which the thermolysis is conducted by heating the product of step (a) at a temperature of from about 90 to about 300°C.

14. (original) A process according to claim 11 in which the thermolysis is conducted by heating the product of step (a) at a temperature of from about 120 to about 300°C.

15. (original) A process according to claim 11 in which the thermolysis is conducted by heating the product of step (a) at a temperature of from about 240 to about 300°C.

16. (original) A process according to claim 1 in which the thermolysis is conducted by subjecting the product of step (a) to electromagnetic radiation or to sonication.

17. (previously presented) A process according to claim 1 in which the functional moiety or plurality of moieties is selected from the group consisting of amine, thiol, isocyanate, carboxyl, hydroxyl, phenoxy, phosphate and titanate.

18. (currently amended) A process according to claim 1 in which the oxide is imprinted with two or more different functional moieties per imprint site.

19. (original) A process according to claim 18 in which the oxide is imprinted with amine and thiol moieties.

20. (previously presented) A process according to claim 1 in which the plurality of functional moieties comprises amine moieties.

21. (previously presented) A process according to claim 20 in which the plurality of thermally labile protecting groups comprises carbamate groups.

22. (original) A process according to claim 21 in which the carbamate is produced from an alcohol.

23. (original) A process according to claim 22 in which the alcohol is a tertiary alcohol.

24. (original) A process according to claim 23 in which the tertiary alcohol is t-butanol.

25. (original) A process according to claim 23 in which the tertiary alcohol is 1-methylcyclohexanol.

26. (original) A process according to claim 22 in which the alcohol is a multifunctional alcohol containing two or more hydroxyl groups.

27. (original) A process according to claim 22 in which the alcohol is 2,4-dimethylpentane-2,4-diol.

28. (previously presented) A process according to claim 1 in which the plurality of functional moieties comprises thiol moieties.

29. (previously presented) A process according to claim 28 in which the plurality of thermally labile protecting groups comprises xanthate groups.

30. (original) A process according to claim 1 further comprising derivatizing or further reacting the imprinted moieties.

31. (original) A process according to claim 30 in which the functional groups comprise amine and/or thiol groups and are contacted with a source of metal ion or with a semiconductor.

32. (original) A process according to claim 31 in which the amine and/or thiol groups are contacted with a metal ion.

33. (original) A process according to claim 32 in which the metal ion is a transition metal ion.

34. (currently amended) An imprinted inorganic oxide substrate comprising four or more thermolytically imprintable functional moieties per imprint site; said functional moieties organized in a non-random pattern on the substrate.

35. (previously presented) An inorganic oxide substrate according to claim 34 in which the functional moieties are selected from the group consisting of amine, thiol, isocyanate, carboxyl, hydroxyl, phenoxyl, phosphate and titanate.

36. (currently amended) An inorganic oxide substrate according to claim 34 in which the non-random pattern comprises pairs of two different functional moieties per imprint site separated from each other by substantially similar distances.

37. (original) An inorganic oxide substrate according to claim 36 in which the functional moieties are amine and thiol moieties.

38. (original) An inorganic oxide substrate according to claim 34 in which the pattern is a one-dimensional pattern.

39. (original) An inorganic substrate according to claim 34 in which the pattern is a two-dimensional pattern.

40. (original) An inorganic oxide substrate according to claim 34 in which the functional moieties do not comprise a self-assembled monolayer.

41. (original) An inorganic oxide substrate according to claim 40 further comprising metal ions or semiconductor molecules linked to the functional moieties.

42. (original) An inorganic oxide substrate according to claim 40 in which the pattern comprises dimensions smaller than about 100 nm and larger than about 0.5 nm.

43. (currently amended) An inorganic oxide substrate imprinted with at least two different functional moieties per imprint site selected from amine, thiol, isocyanate, carboxyl, hydroxyl, phenoxyl, phosphate and titanate; in which the functional moieties are imprinted in an ordered fashion.

44. (currently amended) An inorganic oxide substrate according to claim 43 imprinted with four or more of said functional moieties per imprint site.

45. (original) A particulate inorganic substrate according to claim 43.

46. (original) A generally planar inorganic substrate according to claim 43.

47. (original) An inorganic substrate according to claim 43 in which the inorganic oxide comprises silica, germania, alumina, titania, one or more aluminophosphates, one or more silicaaluminophosphates, ceria, indium-tin oxide, or a mixture thereof.

48. (original) An inorganic oxide substrate according to claim 43 in which the inorganic oxide comprises silica.

49. (canceled).

50. (currently amended) An inorganic oxide substrate according to claim 43 in which the ordered fashion is a one-dimensional pattern.

51. (currently amended) An inorganic oxide substrate according to claim 43 in which the ordered fashion is a two-dimensional pattern.

52. (currently amended) An inorganic oxide substrate according to claim 43 imprinted with a plurality of amine moieties per imprint site.

53. (currently amended) An inorganic oxide substrate according to claim 43 imprinted with a plurality of thiol moieties per imprint site.

54. (currently amended) An inorganic oxide substrate according to claim 43 imprinted with a plurality of amine and thiol moieties per imprint site, each imprint site comprising at least one amine and one thiol moiety.

55. (original) An inorganic oxide substrate according to claim 43 further comprising a metallic structure having nanometric dimensions bonded to the substrate by means of the imprinted functional moieties.

56. -61. (canceled)

62. (currently amended) An inorganic oxide substrate imprinted with four or more functional moieties per imprint site selected from amine, thiol, isocyanate, carboxyl,

hydroxyl, phenoxyl, phosphate and titanate in which the functional moieties are imprinted in an ordered fashion.

63. (previously presented). A particulate inorganic substrate according to claim 62.

64. (previously presented) A generally planar inorganic substrate according to claim 62.

65. (previously presented) An inorganic substrate according to claim 62 in which the inorganic oxide comprises silica, germania, alumina, titania, one or more aluminophosphates, one or more silicaaluminophosphates, ceria, indium-tin oxide, or a mixture thereof.

66. (previously presented) An inorganic oxide substrate according to claim 62 in which the inorganic oxide comprises silica.

67. (canceled)

68. (previously presented) An inorganic oxide substrate according to claim 62 in which the ordered fashion is a one-dimensional pattern.

69. (previously presented). An inorganic oxide substrate according to claim 62 in which the ordered fashion is a two-dimensional pattern.

70. (currently amended) An inorganic oxide substrate according to claim 62 imprinted with four or more amine moieties per imprint site.

71. (currently amended) An inorganic oxide substrate according to claim 62 imprinted with four or more thiol moieties per imprint site.

72. (currently amended) An inorganic oxide substrate according to claim 62 imprinted with four or more moieties per imprint site selected from amine and thiol moieties.



73. (previously presented) An inorganic oxide substrate according to claim 62 further comprising a metallic structure having nanometric dimensions bonded to the substrate by means of the imprinted functional moieties.